A STRUCTURAL EQUATION MODEL OF FACTORS INFLUENCING THAI DIGITAL MUSIC PIRACY: A CONCEPTUAL PERSPECTIVE

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Abstract

This study presents a conceptual framework, using structural equation modeling, of the variables that influence Thai digital music piracy. From both the 1997 and 2008 economic turmoil to the technological leaps from cassettes, to CDs, to the Internet and the related peer-to-peer (P2P) file sharing technologies, the Thai music industry has and continues to witness tumultuous times. More recently, broadband and Internet enabled smart phones have exacerbated the issues swirling around digital music piracy and the loss of revenue to both the music label houses and their artists. This study is therefore focused on the variables that contribute to factors influencing piracy. Music labels and artists need to understand the motives that cause users willingness to embrace illegal downloading and develop methods and markets to counter this act which is making business unsustainable.

Keywords: attitudes, music business, music piracy, perceived benefits, perceived risk, SEM

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Until recently, there was one dominant way of recording sounds so that they could be reproduced at a later time or in a different location: analog magnetic recording (Kadis, 2015). In fact, magnetic recording techniques are still the most common way of recording signals, but the encoding method is digital.

According to a symposium by the National Recording Preservation Board hosted by the US Library of Congress, it was stated that throughout the 125-year history of the record business, convenience has often prevailed in the marketplace over audio fidelity quality (Brylawski, Lerman, Pike, & Smith, 2014). This is consistent with Manuel (1993) who stated that, in Thailand, cassettes and 8-track tapes dramatically replaced vinyl from 1977 onwards as they were cheaper and more portable than vinyl and phonographs. Furthermore, the cost of the mass production of cassettes was lower than pressing records.

Thus, formats have changed over the many decades of the history of recordings, ranging from Thomas A. Edison's early 1877 'tinfoil' phonograph device to the relabeled and trademarked 'gramophone' in 1887 (AES, 2014; The Thomas Edison Papers, 2012). Skipping quickly to modern inventions and digital music piracy legislation we see (BPI, 2015; AES, 2014; Rogers, 2013):

1975 - Digital tape recording begins to take hold in professional audio studios.

1977 - The cassette tape was introduced into Thailand (Wuttipong, 2011).

1980 - 3M, Mitsubishi, Sony and Studer each introduce a multi-track digital recorder.

1981 - Philips demonstrates the Compact Disc (CD).

1991 - The German organization 'The Fraunhofer Institute' invents MP3 file compression.

1996 - Record labels start adding multimedia files to new releases, called "enhanced CDs."

1998 - Digital Millennium Copyright Act (DMCS) is passed in the USA providing harsher punishments for music fan's file-sharing.

2010 – Sony stops manufacturing the Sony Walkman (Rogers, 2013) as other technologies and innovations such as the Internet and Smart phones take over the market.

According to Rogers (2013), tape for audio storage was first showcased at the Berlin Radio Show in 1935, on the reel-to-reel Magnetophon machine, but it would take another three decades for the stereo compact cassette to arrive. Dutch manufacturer Philips got there first in 1963, alongside the first battery-powered lightweight cassette player with music albums on cassette arriving in the US in 1966. Between 1985 and 1992, the cassette tape was the most popular format in the UK, before a small silver disc started ruining the party (Rogers, 2015).

According to Witt (2015), starting in the late 1990s, illegal file sharing gradually brought the music industry to its knees and then i*n 2001, to make matters worse, a new type of software – BitTorrent – was launched that simplified and sped up the online file sharing process. Files were shared peer-to-peer but had to be tracked by a central host site.*

In partial response to this digital music piracy, America's President Clinton signed the Digital Millennium Copyright Act (DMCA, 1998) *into law on* October 28, 1998 which was US legislation aimed at enforcing international treaties including the WIPO Copyright Treaty (WCT) and the WIPO

Performances and Phonograms Treaty (WPPT), each requiring member countries to provide protection to certain works from other member countries or created by nationals of other member countries. That protection must be no less favorable than that accorded to domestic works.

Technology, however, leapfrogged over legislation, the related enforcement laws, and the government's ability to enforce them as in 2001 Apple launched the iPod which had the ability to store 5 GB of music or about 1,000 songs (BPS, 2015) which could easily be downloaded from the Internet. With slow dial-up connections ending and students gaining access to broadband connections, entire albums could be queued up before sleep with a student waking up to multiple, downloaded albums in the morning.

At the same time however, the Internet's Napster was dealt a fatal blow when the 9th U.S. Circuit Court of Appeals in San Francisco ruled that the company was violating copyright laws and ordered it to stop distributing copyrighted music. However, by 2003, in spite of considerable legal progress, it was estimated that Internet users were illegally downloading about 2.6 billion music files each month (Wade, 2004). Thus, the 'cat and mouse' game of digital music piracy seemed like an unstoppable force then just as it does today.

The music industry has undergone drastic changes since the advent of widespread digital distribution of music via the Internet, which includes both illegal file sharing of songs and legal music purchases. Apple's iTunes Music Store took a market share of 80% in the U.S. in 2005 and by 2011 was still the world's largest digital music retailer. (Klym, 2005)

During this period however the 'Big 6' control of music labels (Warner Music, EMI, Sony, BMG, Universal Music, and Polygram) began a consolidation process which in August 2004 saw the merger of the recorded music divisions of Sony and BMG, which created the world's largest music company while reducing the "Big Five" labels to the "Big Four" (Savage, 2005). Furthermore, at the time, Sony BMG Music Entertainment was stated to control over 30% of the global music market with all four labels controlling 75% of the world's musical output.

Later the 'Big 4' became the 'Big 3' consisting of the French-owned Universal Music Group, the Japanese-owned Sony Music Entertainment, and the US-owned Warner Music Group. Today, global entertainment and media along with digital music, will rise to an estimated US$2.23 trillion by 2019 from US$1.74 trillion in 2014, growing at a 5.1% CAGR (PwC, 2015).

In addition, Thailand's global entertainment and media spending is also about to rise 27.8% to US$12.7 billion (427.3 billion baht) by 2019, estimates indicate an annual growth rate (CAGR) of 6.3% over the next five years.

This is consistent with Wuttipong (2012) who stated that the imitation of Western music remained a significant part of Thai popular music in the 1980s which in part led to, in the first half of the decade, the establishment of Thailand's first two major labels: RS and Grammy.

In 2011, the Thai government promoted the concept of a "Creative Economy" as critical to Thailand's development as witnessed by this idea's insertion into the draft of the 11th National Development Plan (NESDB, 2011) and in the nine government programs for developing creative industries that are included

in the second stimulus package (Thai Kem Kang: Strong Thai).

The objective of this focus was on a creative economy that established Thailand as the creative industrial hub of ASEAN, leading to an increase in GDP contributed by creativity from 12% to 20% by the end of 2012 (KIA, 2009). Since there is no single definition of creative industries that is universally accepted, the KIA study applied the UK's DCMS definition of creative industries as "those requiring creativity, skill, and talent, with potential for wealth and job creation through the exploitation of their intellectual property" (KIA, 2009).

Unfortunately, this did not happen. Instead, Thailand's music market industry dropped from US$304 million in 2010 to US$279 million in 2014 with only two major labels (Grammy and RS) and one independent label (Bakery) surviving the Asian financial crisis of 1997 (Wuttipong, 2012). Recent data suggests this trend will continue with projections stating that total music revenues are projected to fall by a CAGR of -0.8% to US$268 million in the next five years with piracy being the No. 1 threat that prevents the Thai music sector from growing (PwC, 2015).

Thailand's downward trend is consistent with global trends in that despite growing digital revenue, global revenue from the entire music industry has been steadily declining year-by-year. In 2013, the total revenue of the music industry, which consists of both digital and physical sales, amounted to $US15 billion dollars, down from $US23.3 billion dollars a decade earlier. This nonstop decrease in collective revenue could primarily be due to the increase in illegal music downloads and other forms of illegal music streaming (Statista, 2016).

The PwC (2015) report, however, suggests that revenue from live music is expected to grow at 6.1% annually, reaching US$166 million by 2019 from US$124 million in 2014, overtaking total recorded music in 2016. While global revenue from digital media will continue to exhibit stronger growth, non-digital media players must adapt to survive and thrive. This means developing content that consumers like, producing innovative offerings, and developing consumer relationships across distribution channels.

LITERATURE REVIEW

1. Perceived Risk

Chiou, Huang, and Lee (2005) researched music piracy in Taiwan and stated that it was the greatest threat facing the music industry worldwide today. The study indicated that attributive satisfaction, perceived prosecution risk, magnitude of consequences, and social consensus are very important in influencing customers' attitude and behavioral intention toward two types of music piracy behavior. According to Tan (2002) research has identified risks as critical factors influencing ethical decision making. The concept of perceived consumer risk was first introduced by Bauer (1960) when he characterized consumer choice in terms of risk taking or reducing behaviors.

This is consistent with Sinha and Mandel (2008) who stated that whether measured indirectly or directly, the tendency to pirate depends, to different extents, on three key factors: positive incentives (e.g., improved functionality of the legal Web site), negative

incentives (e.g., perceived risks of piracy), and consumer characteristics.

In summary, in terms of types of risks people encounter, Fraedrich and Ferrell (1992) summarized six aspects of risks which included financial, performance, physical, psychological, social, and overall risk. In the context of digital piracy, some researchers have attempted to examine the effects of risk on behavior. Applying Fraedrich and Ferrell's categorization of risks, Tan (2002) found all six risks influential when it came to intention to purchase software and Chiou, Huang, and Lee (2005), who tested only prosecution risk, found it influential on people's attitude toward piracy.

2. Perceived Benefit

Limayem, Khalifa, and Chin (2004) suggested that social factors and beliefs concerning consequences of software piracy have significant effects on software piracy intentions. Additionally, if the user decides that the benefits outweigh the risks; this will affect their attitude towards digital music piracy. Benefits leading to illegal activity also include the ease and cost of acquisition of the music files compared to the physical and time-consuming act of having to go to a store or purchase it online (Chen, Shang, & Lin, 2008). This is consistent with Zeithaml (1988) who observed that consumer perceptions of price, quality, and value are considered pivotal determinants of shopping behaviour and product choice. Wang, Ye, Zhang, and Nguyen's (2005) early research on the willingness of Internet consumers to pay for online services concluded that their willingness to pay for online content or services is positively related to their perception of convenience, essentiality, added-value, and service quality, and to their usage rate of a given service.

3. Music Piracy Attitudes

First published in 1935, The Handbook of Social Psychology was the first major reference work to cover the field of social psychology. In it, Allport (1935) defined an attitude as "a mental and neural state of readiness, organized through experience, exerting a directive and dynamic influence upon the individual's response to all objects and situations with which it is related". Bem (1970) summarized attitudes as "attitudes are likes and dislikes". Multi-attribute attitude models have long argued that attitudes (overall summary evaluations) are comprised of beliefs and evaluations regarding expected outcomes (Ajzen and Fishbein, 1980).

Peace, Galletta, and Thong, (2003) stated that the theft of software and other intellectual property has become one of the most visible problems in computing today with punishment severity, punishment certainty, and software cost having direct effects on the individual's attitude toward software piracy, whereas punishment had a significant effect on perceived behavioral control. This is consistent with research by Beck and Ajzen (1991) which connected the theory of planned behavior and predicted intentions and showed that there was a high degree of correlation them, which was a clear indicator predicting behavior which would occur in the future.

Buchan (2005) used an extension of the theory of planned behavior (Ajzen, 1985) to examine the influence of personal, social, and organizational factors on ethical intentions. Specifically, the individual level model tested

direct effects of attitudes, subjective norms, perceived behavioral control, moral sensitivity, and ethical climate. The study found a significant relationship between subjective norms and attitudes with professionals' attitudes towards ethical issues clearly influencing intentions. Moreover, the study illustrated the potential influence of social factors in attitude formation.

4. Music Piracy

Giletti (2011) investigated the consumption of digital music, drawing from the theory of planned behavior (TPB) which placed an emphasis on the role of norms and attitudes in the formation of intentions to either purchase music or download it for free. It was shown that these preferences affect the treatment of digital music as a cultural object with many consumers willing to pay for digital music, but threat of legal repercussions has little effect on their decision to commit piracy or not. Age plays a role as younger consumers view illegal downloading as a norm supplemented by the idea that the Internet is free. Fortunately, however, artist affinity moderated digital music piracy.

Briefly, according to TPB, human behavior is guided by three kinds of considerations: 1) beliefs about the likely consequences or other attributes of the behavioral beliefs, 2) beliefs about the normative expectations of other people's normative beliefs, and 3) beliefs about the presence of factors that may further or hinder performance of the behavior control beliefs (Ajzen, 2002).

Davis (1989) further observed that usefulness has a significantly greater correlation with usage behavior than did ease of use. This is consistent with Venkatesh (2000) who stated that previous research has established that perceived ease of use is an important factor influencing user acceptance and usage behavior of information technologies. Downloading unauthorized music files, being framed as a problem of crime is deemed unethical, but the peer-to-peer systems (thus ease of use) have boosted its popularity and have become the killer application for the music industry (Chen, et al., 2008). Several other studies have indicated a willingness to contribute to copyright infringement (Al-Rafee and Cronan, 2006, Cockrill and Goode, 2012, Cronan and Al-Rafee, 2008, Tan, 2002, Yoon, 2011).

Many in the music industry wish that music had never appeared on the Internet, but it has, and despite all efforts to stop illegal downloading, those in the industry now realize that the Internet has forever changed the face of music (Wade, 2004). The researcher, therefore, after a preliminary review of the literature wishes to propose the following research methodology to determine the variables affecting Thai digital music piracy as shown in Figure 1 below.

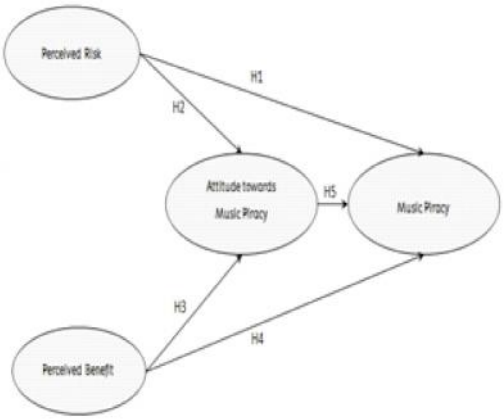

Figure 1 Proposed Conceptual Model

5. Proposed Conceptual Framework

Research Hypothesis

H1: *Perceived Risk* has a direct influence on *Music Piracy*

H2: *Perceived Risk* has a direct influence on *Attitude towards Music Piracy*

H3: *Perceived Benefit* has a direct influence on *Attitude towards Music Piracy*

H4: *Perceived Benefit* has a direct influence on *Music Piracy*

H5: *Attitude towards Music Piracy* has a direct influence on *Music Piracy*

METHODOLOGY

This research aims to model the structure of the factors which influence the variables that influence Thai music piracy. Therefore, the researcher has used the following detailed steps of how to carry out the research.

The Study's Approach

For this study, the researcher will use both quantitative and qualitative research from both primary and secondary data, which will include the following steps and resources:

Study of Primary and Secondary Data

The researcher is currently reviewing the literature related to the Thai and global music industry's concerns and problems related to digital music piracy. Thus far, research has comprised of analyzing published research, textbooks, internet materials, media reports, and data which have been synthesized from the secondary data to develop a conceptual model for the variables that influence the attitudes and perceived benefits of either legally or illegally downloading digital music.

Quantitative Research Methods

Quantitative research will be performed using the primary data by collecting a questionnaire from the target sample. The questionnaire to be used to collect data is structured and written in a realistic, easy-to-understand format which is deemed to be reliable and reasonable. Further measurement and reliability validation will be undertaken as follows:

1. The questionnaire review will be conducted by academic scholars to validate the investigation questions and the use of rhetoric and the simplicity and comprehension of the questions.
2. During the questionnaire trial stage, questions and responses will be monitored so better clarity can be achieved, with questions being updated as required.
3. Perform data collection and statistical analysis.

Qualitative Research Methods

Qualitative research will involve confirming the model of the quantitative research. It is a collection of interviews with individuals who have been involved in the Thai music industry, including label executives, music copyright managers, digital music download business managers, music industry scholars, musicians, and artists.

Sample population

The proposed sample used in this study will consist of 400 individuals who use the

Internet and are often involved with downloading music.

The sample size

Schumacker and Lomax (2010) stated that Structural Equation Modeling (SEM) uses a variety of models to show the relationships between observed variables with the same basic goal of providing a quantitative test of a theoretical model hypothesized by a researcher. Meldrum (2010) further stated that a sample size smaller than 100 should not be used in SEM as it is unreliable. According to Yamane (1967), for populations that are large, for example, more than 100,000, the sample size at the ±5% precision level where confidence level is 95% and P = 0.5 is 400.

To confirm the model of the quantitative research, 10 in-depth interviews with those involved as label executives, music copyright managers, digital music download business managers, music industry scholars, musicians, and artists will be undertaken.

Tools used in the research

For this research, the measurement instrument or questionnaire utilized was prepared from the literature. A self-administered questionnaire (SAQ) is being used as it is exploratory in nature and serves as a starting point for other methodologies.

Quality inspection tools used in the research

The researcher will continue to monitor the quality of the instruments used in the research to be used as a measurement of quality. The entire content validity and reliability is divided into two stages:

1. The questionnaire will be created by the researcher, and be peer-reviewed and tested by use of the content validity of item objective congruence index (IOC) by five experts in their respective fields. The IOC for each item is the summation of scores given by the experts divided by the number of experts. This ensures the quality of the questionnaire with any IOC score less than 0.05 being eliminated. The index of Item-Objective Congruence (IOC) developed by Rovinelli and Hambleton (1977) was also employed to carry out the screening of the questions. The IOC is a procedure used in test development for evaluating content validity at the item development stage. This measure is limited to the assessment of uni-dimensional items or items that measure specified composites of skills. The method prescribed by Rovinelli and Hambleton (1977) results in indices of item congruence in which experts rate the match between an item and several constructs assuming that the item taps only one of the constructs which is unbeknownst to the experts. The study will then proceed to select items with an IOC index higher than 0.5 which will be considered acceptable.

2. Checked by five experts in their fields including:

Label Executive	1 individual
Music License Manager	1 individual
Digital Music Download Business Managers	1 individual
Music Industry Scholar	1 individual
Music Artist	1 individual

Data Collection

Primary Data is concerned with a collection of factors that influence the intention to purchase digital music by Thai music fans. Secondary Data will consist of studying the theories related to the research from various sources; including the Internet, books, manuals, tutorials, articles, research papers, etc., which will be used to define the concepts and theories used in the study.

Data analysis and statistics used.

Quantitative data analysis research will be conducted using statistical analysis as follows:

1. Descriptive statistics including frequency, percentages, means, and standard deviations will be used to demonstrate the profiles as well as rating scores and response rate (Sullivan & Artino, 2013).
2. The Corrected Item-Total Correlation (CITC) is required to test the validity > 0.5 where Cronbach's Alpha Coefficient > 0.7 for the reliability.
3. For the multi-collinearity test, the bivariated correlation <=0.7 when tolerance is between 0-1 and Variance Inflation Factor (VIF) <=10.
4. The standard regression weights > 0.5 at the statistical significance | t | >=1.96 or C.R. (Critical ratio) and R^2 >=0.2.
5. The overall goodness of-fit indices of the CFA measurement model indicate a satisfactory fit of the measurement model with Chi-square per degree of freedom (λ^2/degree of freedom) < 2 , p >.05 , GFI>.90 , NFI>.90 , CFI>.95, and RMSEA< .05

An analysis will be conducted using structural equation modeling (SEM) to determine the relationship of the factors influencing digital music piracy amongst Thais. The data will be run through the software, IBM SPSS AMOS Ver. 22.0.

Qualitative data analysis

To confirm that the results of the quantitative analysis are credible and the findings reliable, the researcher will conduct interviews with those involved as label executives, music copyright managers, digital music download business managers, music industry scholars, musicians, and artists. Afterwards, the researcher will proceed to interpret qualitative information, including classified information. According to Hancock, Windridge, and Ockleford (2007) data collection and analysis should proceed concurrently: in theory, data analysis should occur at the same time as data collection to allow researchers to refine the research questions and data collection procedures in the light of new findings, but in reality, this is hard to achieve (e.g. because transcribing recorded interviews takes time, and analysis takes even more time). However, it is important to review transcripts as they are transcribed and to undertake informal modification of prompt guides.

The idea that qualitative data is mainly 'unstructured' is useful, if this is taken not as a definition but rather as an imperative for analysis. Although unstructured data may not be classified, it can be classified and indeed one of the main aims of qualitative analysis is often to do just that (Dey, 1993).

CONCLUSION

The End of the Beginning

According to Wade (2004), the first battle in the war between the pirates and the industry has wound down, with the industry winning in the courts and the pirates still controlling the Internet. For the major labels, winning the next battle will mean that the status quo needs to be changed and new business models must be created.

The first major digital music industry success was made by Steve Jobs of Apple Computer, Inc. with his online music store, iTunes. After its launch in early 2003, iTunes accounted for the legal downloading of over 25 million songs in 2003 and was named Time magazine's invention of the year. It was a disarmingly simple concept: sell songs in digital format for less than a dollar and let buyers play them whenever and wherever they like—as long as it's on an Apple iPod (Taylor, 2003).

Watching this success, the music labels rushed to license their catalogs for sale on the Internet and convince those that download it to do so legally, but as the research has suggested, with limited success. Technology always seems to intervene and make illegally acquiring digital music easier as was witnessed by the movement from dial-up networks to broadband, to peer to peer (P2P), and now to Internet enabled smart phones.

In Thailand, according to Wuttipong (2012) the major labels have felt an extreme impact as a result of this piracy and have earnestly attempted to solve the problem. However, during the early half of the 2000s, no solution could be found. The reasons behind this can be explained by two significant factors, namely the difficulty in arresting the piracy perpetrators and the lack of knowledge of copyright laws amongst Thai music consumers.

Simply encouraging concern in consumers might not be enough to gain revenue back from the piracy business, meaning that major labels need to modify their business model in order to deal with this situation as piracy still remains a significant issue in the Thai entertainment industry. Whilst the period between 1982 and 1994 may be characterized as the golden age of Thai popular music, the period between 1997 and 2006 may be regarded as its polar opposite, an era during which album sales plummeted, piracy was prevalent, and the policies of musical corporations limited the financial investment in music production (Wuttipong, 2012).

Additionally, the effects of multiple economic recessions have been far-reaching and enduring. The economic turmoil was further exacerbated by problems associated with various technological advancements (the development of MP3 technology, the Internet, broadband, and now today's smart phones). These technological factors combined with economic turmoil in the post-1997 and post-2008 periods contributed to the major and minor labels confronting significant obstacles to their sustainability and the management of their labels. Revenues dropped, organizations collapsed, and artists were sent packing from all these changes. Today, the industry is still trying to find its way out of the dark with industry experts projecting further losses into the foreseeable future.

Full notice has been given by countless experts on how the Internet is transforming the entire music industry just as cassettes and CDs have done in the past. The only question that remains is who will take control of the

Internet and the digital music downloading business—the industry or the pirates?

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